

Patent

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IN THE CLAIMS:

Please amend the claims according to the following replacement claim set:

1. (Original) An electrochemical device comprising:
 - an electrochemical cell having an anode, a cathode, and an ion exchange membrane disposed in an engageable position between the anode and the cathode;
 - a clamping mechanism coupled to the anode and the cathode and allowing relative movement of the anode and cathode between a disengaged position and an engaged position providing ionic communication through the ion exchange membrane;
 - a cathodic electrocatalyst permanently formed onto the cathode.
2. (Original) The electrochemical device of claim 1, wherein the disengaged position provides physical separation of the cathodic electrocatalyst from the ion exchange membrane.
3. (Original) The electrochemical device of claim 1, wherein the cathodic electrocatalyst and the ion exchange membrane are physically separated during inactivity of the electrochemical cell.
4. (Original) The electrochemical device of claim 1, further comprising:
 - means for delivering the unused portions of the ion exchange membrane into alignment with the cathode by handling portions of the ion exchange membrane that extend beyond the cathode while the anode and the cathode are disengaged.
5. (Original) The electrochemical device of claim 1, further comprising:
 - an anodic electrocatalyst permanently formed onto the anode.
6. (Canceled)

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7. (Canceled)

8. (Canceled)

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Currently Amended) An electrochemical device comprising:

an electrochemical cell having an anode, and a cathode, and an ion-exchange membrane disposed in an engageable position between the anode and the cathode;

a carrier strip disposed in an engageable position between the anode and the cathode and having a plurality of segments thereon, each of the segments containing a duplicate array of components for forming an active area of the electrochemical cell;

a clamping mechanism coupled to the anode and the cathode and allowing relative movement of the anode and cathode between a disengaged position and an engaged position providing ionic communication through the ion-exchange membrane coupling one of the carrier strip segments between the anode and cathode; and

~~a carrier strip divided into segments;~~

~~an array of duplicate components for forming a part of the electrochemical cell having an active area, wherein each of the segments contain the array of duplicate components; including a selectively rupturable water reservoir;~~

a power supply.

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14. (Original) The electrochemical device of claim 13, wherein the power supply is a battery.
15. (Currently Amended) The electrochemical device of claim 13, wherein ~~the duplicate~~ each array of components includes one or more components ~~are~~ selected from a proton exchange membrane, an anion exchange membrane, an anodic electrocatalyst, a cathodic electrocatalyst, a selectively rupturable water reservoir, an ozone indicator patch ~~and combinations thereof~~.
16. (Canceled)
17. (Canceled)
18. (New) The electrochemical device of claim 2, wherein the cathodic electrocatalyst and the ion exchange membrane are physically separated during inactivity of the electrochemical cell.
19. (New) The electrochemical device of claim 2, wherein the ion exchange membrane is a proton exchange membrane having functional groups that form acids in the presence of water.
20. (New) The electrochemical device of claim 19, wherein the proton exchange membrane comprises a perfluorinated sulfonic acid polymer.
21. (New) The electrochemical device of claim 4, wherein the means for delivering comprises a supply reel maintaining unused portions of the ion exchange membrane and a takeup reel collecting used portions of the ion exchange membrane.
22. (New) The electrochemical device of claim 1, wherein the clamping mechanism comprises a guide member to align the anode and cathode.

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23. (New) The electrochemical device of claim 1, wherein the clamping mechanism comprises an actuator to bias the anode between an engaged position and a disengaged position.

24. (New) The electrochemical device of claim 23, wherein the actuator is selected from solenoids, hydraulic cylinders, pneumatic cylinders, push buttons and triggers.

25. (New) The electrochemical device of claim 1, wherein the clamping mechanism comprises an actuator to bias the cathode between an engaged position and a disengaged position.

26. (New) The electrochemical device of claim 25, wherein the actuator is selected from solenoids, hydraulic cylinders, pneumatic cylinders, push buttons and triggers.

27. (New) An apparatus comprising:

an electrochemical cell having an anode, a cathode, and an ion exchange membrane disposed in an engageable position between the anode and the cathode;

a clamping mechanism coupled to the anode and the cathode and allowing relative movement of the anode and cathode between a disengaged position and an engaged position providing ionic communication through the ion exchange membrane;

an array of cathodic electrocatalyst patches deposited on the ion exchange membrane facing the cathode; and

means for delivering individual cathodic electrocatalyst patches into alignment with the cathode by handling portions of the ion exchange membrane that extend beyond the cathode.

28. (New) The electrochemical cell of claim 27, further comprising:

means for preventing water wicking through the membrane from the aligned patches of the array to adjacent cathodic electrocatalyst patches.

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29. (New) The electrochemical cell of claim 28, wherein the means for preventing water wicking comprises a pair of rollers on opposing sides of the ion exchange membrane between the active area and a supply of unused cathodic electrocatalyst patches.

30. (New) The electrochemical cell of claim 29, further comprising a pair of rollers on opposing sides of the ion exchange membrane between the active area and the portion of the ion exchange membrane having used cathodic electrocatalyst patches.

31. (New) The electrochemical cell of claim 27, wherein the ion exchange membrane is an elongated strip.

32. (New) The electrochemical cell of claim 31, wherein the strip is provided in a roll.

33. (New) The electrochemical cell of claim 27, further comprising a selectively rupturable water reservoir secured to the ion exchange membrane adjacent each cathodic electrocatalyst patch, wherein rupturing of the reservoir delivers water to the membrane in a region between the anode and the cathode.

34. (New) The electrochemical cell of claim 27, further comprising:

an ozone indicator patch secured to the ion exchange membrane adjacent each cathodic electrocatalyst patch; and

an optical probe for measuring color changes of the ozone indicator patch.

35. (New) The electrochemical cell of claim 27, wherein the clamp has a sealing member disposed around the perimeter of the cathode to prevent water wicking to unused cathodic electrocatalyst patches.